



## SEQUENCE LISTING

CALGENE LLC

&lt;120&gt; PLANT VDE GENES AND METHODS RELATED THERETO

&lt;130&gt; 119-2 US

&lt;140&gt; 09075375

&lt;141&gt; 1998-05-07

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&lt;151&gt; 1996-11-07

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&lt;150&gt; 60023502

&lt;151&gt; 1996-08-06

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&lt;151&gt; 1995-11-07

&lt;160&gt; 6

&lt;170&gt; PatentIn Ver. 2.0

&lt;210&gt; 1

&lt;211&gt; 1981

&lt;212&gt; DNA

&lt;213&gt; Lactuca sativa

&lt;400&gt; 1

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<210> 2

<211> 1412

<212> PRT

<213> Lactuca sativa

<400> 2

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20 25 30

Gln Pro Pro Thr Asn Ile Ile Met Met Lys Ile Arg Ser Asn Asn Gly  
35 40 45

Tyr Phe Asn Ser Phe Arg Leu Phe Thr Ser Tyr Lys Thr Ser Ser Phe  
50 55 60

Ser Asp Ser Ser His Cys Lys Asp Lys Ser Gln Ile Cys Ser Ile Asp  
65 70 75 80

Thr Ser Phe Glu Glu Ile Gln Arg Phe Asp Leu Lys Arg Gly Met Thr  
85 90 95

Leu Ile Leu Glu Lys Gln Trp Arg Gln Phe Ile Gln Leu Ala Ile Val  
100 105 110

Leu Val Cys Thr Phe Val Ile Val Pro Arg Val Asp Ala Val Asp Ala

115	120	125
Leu Lys Thr Cys Ala Cys	Leu Leu Lys Glu Cys	Arg Ile Glu Leu Ala
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Lys Cys Ile Ala Asn Pro Ser Cys Ala Ala Asn Val Ala Cys Leu Gln		
145	150	155 160
Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys Cys Gly		
	165 170	175
Asp Leu Phe Glu Asn Ser Val Val Asp Gln Phe Asn Glu Cys Ala Val		
	180 185	190
Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Glu Phe Pro		
	195 200	205
Val Pro Asp Arg Asn Ala Val Val Gln Asn Phe Asn Met Lys Asp Phe		
	210 215	220
Ser Gly Lys Trp Tyr Ile Thr Ser Gly Leu Asn Pro Thr Phe Asp Ala		
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Phe Asp Cys Gln Leu His Glu Phe His Met Glu Asn Asp Lys Leu Val		
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Gly Asn Leu Thr Trp Arg Ile Lys Thr Leu Asp Gly Gly Phe Phe Thr		
	260 265	270
Arg Ser Ala Val Gln Thr Phe Val Gln Asp Pro Asp Leu Pro Gly Ala		
	275 280	285
Leu Tyr Asn His Asp Asn Glu Phe Leu His Tyr Gln Asp Asp Trp Tyr		
	290 295	300
Ile Leu Ser Ser Gln Ile Glu Asn Lys Pro Asp Asp Tyr Ile Phe Val		
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Tyr Tyr Arg Gly Arg Asn Asp Ala Trp Asp Gly Tyr Gly Gly Ser Val		
	325 330	335
Ile Tyr Thr Arg Ser Pro Thr Leu Pro Glu Ser Ile Ile Pro Asn Leu		
	340 345	350
Gln Lys Ala Ala Lys Ser Val Gly Arg Asp Phe Asn Asn Phe Ile Thr		
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Thr Asp Asn Ser Cys Gly Pro Glu Pro Pro Leu Val Glu Arg Leu Glu		

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Lys Thr Ala Glu Glu Gly Glu Lys Leu Leu Ile Lys Glu Ala Val Glu		
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Ile Glu Glu Glu Val Glu Lys Glu Val Glu Lys Val Arg Asp Thr Glu		
405	410	415
Met Thr Leu Phe Gln Arg Leu Leu Glu Gly Phe Lys Glu Leu Gln Gln		
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Asp Glu Glu Asn Phe Val Arg Glu Leu Ser Lys Glu Glu Lys Glu Ile		
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Leu Asn Glu Leu Gln Met Glu Ala Thr Glu Val Glu Lys Leu Phe Gly		
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465	470	475 480
Asn Phe Leu Ala Asn His Glu Thr Ile Lys Tyr Tyr Val Gly Ser Lys		
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Leu Pro Gly His Lys Arg Phe Ser Trp Gly Trp Glu Asp Tyr Phe Gly		
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Ser Ile Val Val Ala Lys Ile Cys Ser Ser Arg Arg Ile Pro Arg Tyr		
515	520	525
Phe Arg Lys Ser Pro Arg Ile Cys Cys Gly Leu Asp Ser Arg Gly Leu		
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Gln Leu Phe Ser His Gly Lys His Asn Leu Ser Pro Ala His Ser Ile		
545	550	555 560
Asn Gln Asn Val Pro Lys Gly Asn Ser Gly Cys Lys Phe Pro Lys Asp		
565	570	575
Val Ala Leu Met Val Trp Glu Lys Trp Gly Gln Phe Ala Lys Thr Ala		
580	585	590
Ile Val Ala Ile Phe Ile Leu Ser Val Ala Ser Lys Ala Asp Ala Val		
595	600	605
Asp Ala Leu Lys Thr Cys Thr Cys Leu Leu Lys Glu Cys Arg Leu Glu		
610	615	620
Leu Ala Lys Cys Ile Ser Asn Pro Ala Cys Ala Ala Asn Val Ala Cys		

625	630	635	640
Leu Gln Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys			
645	650	655	
Cys Gly Asp Leu Phe Glu Asn Ser Val Val Asp Glu Phe Asn Glu Cys			
660	665	670	
Ala Val Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Asp			
675	680	685	
Phe Pro Val Pro Asp Pro Ser Val Leu Val Gln Lys Phe Asp Met Lys			
690	695	700	
Asp Phe Ser Gly Lys Trp Phe Ile Thr Arg Gly Leu Asn Pro Thr Phe			
705	710	715	720
Asp Ala Phe Asp Cys Gln Leu His Glu Phe His Thr Glu Glu Asn Lys			
725	730	735	
Leu Val Gly Asn Leu Ser Trp Arg Ile Arg Thr Pro Asp Gly Gly Phe			
740	745	750	
Phe Thr Arg Ser Ala Val Gln Lys Phe Val Gln Asp Pro Lys Tyr Pro			
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Gly Ile Leu Tyr Asn His Asp Asn Glu Tyr Leu Leu Tyr Gln Asp Asp			
770	775	780	
Trp Tyr Ile Leu Ser Ser Lys Val Glu Asn Ser Pro Glu Asp Tyr Ile			
785	790	795	800
Phe Val Tyr Tyr Lys Gly Arg Asn Asp Ala Trp Asp Gly Tyr Gly Gly			
805	810	815	
Ser Val Leu Tyr Thr Arg Ser Ala Val Leu Pro Glu Ser Ile Ile Pro			
820	825	830	
Glu Leu Gln Thr Ala Ala Gln Lys Val Gly Arg Asp Phe Asn Thr Phe			
835	840	845	
Ile Lys Thr Asp Asn Thr Cys Gly Pro Glu Pro Pro Leu Val Glu Arg			
850	855	860	
Leu Glu Lys Lys Val Glu Glu Gly Glu Arg Thr Ile Ile Lys Glu Val			
865	870	875	880
Glu Glu Ile Glu Glu Glu Val Glu Lys Val Arg Asp Lys Glu Val Thr			

885	890	895
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Glu Asn Phe Leu Arg Glu Leu Ser Lys Glu Glu Met Asp Val Leu Asp 915	920	925
Gly Leu Lys Met Glu Ala Thr Glu Val Glu Lys Leu Phe Gly Arg Ala 930	935	940
Leu Pro Ile Arg Lys Leu Met Ala Val Ala Thr His Cys Phe Thr Ser 945	950	955
Pro Cys His Asp Arg Ile Arg Phe Phe Ser Ser Asp Asp Gly Ile Gly 965	970	975
Arg Leu Gly Ile Thr Arg Lys Arg Ile Asn Gly Thr Phe Leu Leu Lys 980	985	990
Ile Leu Pro Pro Ile Gln Ser Ala Asp Leu Arg Thr Thr Gly Gly Arg 995	1000	1005
Ser Ser Arg Pro Leu Ser Ala Phe Arg Ser Gly Phe Ser Lys Gly Ile 1010	1015	1020
Phe Asp Ile Val Pro Leu Pro Ser Lys Asn Glu Leu Lys Glu Leu Thr 1025	1030	1035
Ala Pro Leu Leu Leu Lys Leu Val Gly Val Leu Ala Cys Ala Phe Leu 1045	1050	1055
Ile Val Pro Ser Ala Asp Ala Val Asp Ala Leu Lys Thr Cys Ala Cys 1060	1065	1070
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Val Val Asp Glu Phe Asn Glu Cys Ala Val Ser Arg Lys Lys Cys Val 1125	1130	1135
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Glu Phe His Thr Glu Gly Asp Asn Lys Leu Val Gly Asn Ile Ser Trp		
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Arg Ile Lys Thr Leu Asp Ser Gly Phe Phe Thr Arg Ser Ala Val Gln		
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Lys Phe Val Gln Asp Pro Asn Gln Pro Gly Val Leu Tyr Asn His Asp		
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Asn Glu Tyr Leu His Tyr Gln Asp Asp Trp Tyr Ile Leu Ser Ser Lys		
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Ile Glu Asn Lys Pro Glu Asp Tyr Ile Phe Val Tyr Tyr Arg Gly Arg		
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Asn Asp Ala Trp Asp Gly Tyr Gly Gly Ala Val Val Tyr Thr Arg Ser		
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Arg Leu Ala Glu Gly Phe Asn Glu Leu Lys Gln Asp Glu Glu Asn Phe		
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1395

1400

1405

Arg Lys Val Arg

1410

&lt;210&gt; 3

&lt;211&gt; 1589

&lt;212&gt; DNA

&lt;213&gt; Nicotiana tabacum

&lt;400&gt; 3

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&lt;210&gt; 4

&lt;211&gt; 1412

&lt;212&gt; PRT

&lt;213&gt; Nicotiana tabacum

&lt;400&gt; 4

Met Ala Leu Ser Leu His Thr Val Phe Leu Cys Lys Glu Glu Ala Leu

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5

10

15



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Gln Pro Pro Thr Asn Ile Ile Met Met Lys Ile Arg Ser Asn Asn Gly  
                   35                                  40                                  45

Tyr Phe Asn Ser Phe Arg Leu Phe Thr Ser Tyr Lys Thr Ser Ser Phe  
                   50                                  55                                  60

Ser Asp Ser Ser His Cys Lys Asp Lys Ser Gln Ile Cys Ser Ile Asp  
                   65                                  70                                  75                                  80

Thr Ser Phe Glu Glu Ile Gln Arg Phe Asp Leu Lys Arg Gly Met Thr  
                                   85                                  90                                  95

Leu Ile Leu Glu Lys Gln Trp Arg Gln Phe Ile Gln Leu Ala Ile Val  
                   100                                  105                                  110

Leu Val Cys Thr Phe Val Ile Val Pro Arg Val Asp Ala Val Asp Ala  
                   115                                  120                                  125

Leu Lys Thr Cys Ala Cys Leu Leu Lys Glu Cys Arg Ile Glu Leu Ala  
                   130                                  135                                  140

Lys Cys Ile Ala Asn Pro Ser Cys Ala Ala Asn Val Ala Cys Leu Gln  
                   145                                  150                                  155                                  160

Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys Cys Gly  
                                   165                                  170                                  175

Asp Leu Phe Glu Asn Ser Val Val Asp Gln Phe Asn Glu Cys Ala Val  
                   180                                  185                                  190

Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Glu Phe Pro  
                   195                                  200                                  205

Val Pro Asp Arg Asn Ala Val Val Gln Asn Phe Asn Met Lys Asp Phe  
                   210                                  215                                  220

Ser Gly Lys Trp Tyr Ile Thr Ser Gly Leu Asn Pro Thr Phe Asp Ala  
                   225                                  230                                  235                                  240

Phe Asp Cys Gln Leu His Glu Phe His Met Glu Asn Asp Lys Leu Val  
                                   245                                  250                                  255

Gly Asn Leu Thr Trp Arg Ile Lys Thr Leu Asp Gly Gly Phe Phe Thr  
                   260                                  265                                  270

Arg	Ser	Ala	Val	Gln	Thr	Phe	Val	Gln	Asp	Pro	Asp	Leu	Pro	Gly	Ala	275	280	285
Leu	Tyr	Asn	His	Asp	Asn	Glu	Phe	Leu	His	Tyr	Gln	Asp	Asp	Trp	Tyr	290	295	300
Ile	Leu	Ser	Ser	Gln	Ile	Glu	Asn	Lys	Pro	Asp	Asp	Tyr	Ile	Phe	Val	305	310	315
Tyr	Tyr	Arg	Gly	Arg	Asn	Asp	Ala	Trp	Asp	Gly	Tyr	Gly	Gly	Ser	Val	325	330	335
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Gln	Lys	Ala	Ala	Lys	Ser	Val	Gly	Arg	Asp	Phe	Asn	Asn	Phe	Ile	Thr	355	360	365
Thr	Asp	Asn	Ser	Cys	Gly	Pro	Glu	Pro	Pro	Leu	Val	Glu	Arg	Leu	Glu	370	375	380
Lys	Thr	Ala	Glu	Glu	Gly	Glu	Lys	Leu	Leu	Ile	Lys	Glu	Ala	Val	Glu	385	390	395
Ile	Glu	Glu	Glu	Val	Glu	Lys	Glu	Val	Glu	Lys	Val	Arg	Asp	Thr	Glu	405	410	415
Met	Thr	Leu	Phe	Gln	Arg	Leu	Leu	Glu	Gly	Phe	Lys	Glu	Leu	Gln	Gln	420	425	430
Asp	Glu	Glu	Asn	Phe	Val	Arg	Glu	Leu	Ser	Lys	Glu	Glu	Lys	Glu	Ile	435	440	445
Leu	Asn	Glu	Leu	Gln	Met	Glu	Ala	Thr	Glu	Val	Glu	Lys	Leu	Phe	Gly	450	455	460
Arg	Ala	Leu	Pro	Ile	Arg	Lys	Leu	Arg	Met	Ala	Leu	Ala	Pro	His	Ser	465	470	475
Asn	Phe	Leu	Ala	Asn	His	Glu	Thr	Ile	Lys	Tyr	Tyr	Val	Gly	Ser	Lys	485	490	495
Leu	Pro	Gly	His	Lys	Arg	Phe	Ser	Trp	Gly	Trp	Glu	Asp	Tyr	Phe	Gly	500	505	510
Ser	Ile	Val	Val	Ala	Lys	Ile	Cys	Ser	Ser	Arg	Arg	Ile	Pro	Arg	Tyr	515	520	525

Phe Arg Lys Ser Pro Arg Ile Cys Cys Gly Leu Asp Ser Arg Gly Leu  
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Gln Leu Phe Ser His Gly Lys His Asn Leu Ser Pro Ala His Ser Ile  
 545 550 555 560

Asn Gln Asn Val Pro Lys Gly Asn Ser Gly Cys Lys Phe Pro Lys Asp  
 565 570 575

Val Ala Leu Met Val Trp Glu Lys Trp Gly Gln Phe Ala Lys Thr Ala  
 580 585 590

Ile Val Ala Ile Phe Ile Leu Ser Val Ala Ser Lys Ala Asp Ala Val  
 595 600 605

Asp Ala Leu Lys Thr Cys Thr Cys Leu Leu Lys Glu Cys Arg Leu Glu  
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Leu Ala Lys Cys Ile Ser Asn Pro Ala Cys Ala Ala Asn Val Ala Cys  
 625 630 635 640

Leu Gln Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys  
 645 650 655

Cys Gly Asp Leu Phe Glu Asn Ser Val Val Asp Glu Phe Asn Glu Cys  
 660 665 670

Ala Val Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Asp  
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Phe Pro Val Pro Asp Pro Ser Val Leu Val Gln Lys Phe Asp Met Lys  
 690 695 700

Asp Phe Ser Gly Lys Trp Phe Ile Thr Arg Gly Leu Asn Pro Thr Phe  
 705 710 715 720

Asp Ala Phe Asp Cys Gln Leu His Glu Phe His Thr Glu Glu Asn Lys  
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Leu Val Gly Asn Leu Ser Trp Arg Ile Arg Thr Pro Asp Gly Gly Phe  
 740 745 750

Phe Thr Arg Ser Ala Val Gln Lys Phe Val Gln Asp Pro Lys Tyr Pro  
 755 760 765

Gly Ile Leu Tyr Asn His Asp Asn Glu Tyr Leu Leu Tyr Gln Asp Asp  
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Trp Tyr Ile Leu Ser Ser Lys Val Glu Asn Ser Pro Glu Asp Tyr Ile			
785	790	795	800
Phe Val Tyr Tyr Lys Gly Arg Asn Asp Ala Trp Asp Gly Tyr Gly Gly			
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Ser Val Leu Tyr Thr Arg Ser Ala Val Leu Pro Glu Ser Ile Ile Pro			
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Glu Leu Gln Thr Ala Ala Gln Lys Val Gly Arg Asp Phe Asn Thr Phe			
	835	840	845
Ile Lys Thr Asp Asn Thr Cys Gly Pro Glu Pro Pro Leu Val Glu Arg			
	850	855	860
Leu Glu Lys Lys Val Glu Glu Gly Glu Arg Thr Ile Ile Lys Glu Val			
	865	870	875
Glu Glu Ile Glu Glu Glu Val Glu Lys Val Arg Asp Lys Glu Val Thr			
	885	890	895
Leu Phe Ser Lys Leu Phe Glu Gly Phe Lys Glu Leu Gln Arg Asp Glu			
	900	905	910
Glu Asn Phe Leu Arg Glu Leu Ser Lys Glu Glu Met Asp Val Leu Asp			
	915	920	925
Gly Leu Lys Met Glu Ala Thr Glu Val Glu Lys Leu Phe Gly Arg Ala			
	930	935	940
Leu Pro Ile Arg Lys Leu Met Ala Val Ala Thr His Cys Phe Thr Ser			
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Pro Cys His Asp Arg Ile Arg Phe Phe Ser Ser Asp Asp Gly Ile Gly			
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Arg Leu Gly Ile Thr Arg Lys Arg Ile Asn Gly Thr Phe Leu Leu Lys			
	980	985	990
Ile Leu Pro Pro Ile Gln Ser Ala Asp Leu Arg Thr Thr Gly Gly Arg			
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Ser Ser Arg Pro Leu Ser Ala Phe Arg Ser Gly Phe Ser Lys Gly Ile			
	1010	1015	1020
Phe Asp Ile Val Pro Leu Pro Ser Lys Asn Glu Leu Lys Glu Leu Thr			
	1025	1030	1035
			1040

Ala Pro Leu Leu Leu Lys Leu Val Gly Val Leu Ala Cys Ala Phe Leu	1045	1050	1055
Ile Val Pro Ser Ala Asp Ala Val Asp Ala Leu Lys Thr Cys Ala Cys	1060	1065	1070
Leu Leu Lys Gly Cys Arg Ile Glu Leu Ala Lys Cys Ile Ala Asn Pro	1075	1080	1085
Ala Cys Ala Ala Asn Val Ala Cys Leu Gln Thr Cys Asn Asn Arg Pro	1090	1095	1100
Asp Glu Thr Glu Cys Gln Ile Lys Cys Gly Asp Leu Phe Glu Asn Ser	1105	1110	1115
Val Val Asp Glu Phe Asn Glu Cys Ala Val Ser Arg Lys Lys Cys Val	1125	1130	1135
Pro Arg Lys Ser Asp Leu Gly Glu Phe Pro Ala Pro Asp Pro Ser Val	1140	1145	1150
Leu Val Gln Asn Phe Asn Ile Ser Asp Phe Asn Gly Lys Trp Tyr Ile	1155	1160	1165
Thr Ser Gly Leu Asn Pro Thr Phe Asp Ala Phe Asp Cys Gln Leu His	1170	1175	1180
Glu Phe His Thr Glu Gly Asp Asn Lys Leu Val Gly Asn Ile Ser Trp	1185	1190	1195
Arg Ile Lys Thr Leu Asp Ser Gly Phe Phe Thr Arg Ser Ala Val Gln	1205	1210	1215
Lys Phe Val Gln Asp Pro Asn Gln Pro Gly Val Leu Tyr Asn His Asp	1220	1225	1230
Asn Glu Tyr Leu His Tyr Gln Asp Asp Trp Tyr Ile Leu Ser Ser Lys	1235	1240	1245
Ile Glu Asn Lys Pro Glu Asp Tyr Ile Phe Val Tyr Tyr Arg Gly Arg	1250	1255	1260
Asn Asp Ala Trp Asp Gly Tyr Gly Gly Ala Val Val Tyr Thr Arg Ser	1265	1270	1275
Ser Val Leu Pro Asn Ser Ile Ile Pro Glu Leu Glu Lys Ala Ala Lys	1285	1290	1295

Ser Ile Gly Arg Asp Phe Ser Thr Phe Ile Arg Thr Asp Asn Thr Cys  
 1300 1305 1310

Gly Pro Glu Pro Ala Leu Val Glu Arg Ile Glu Lys Thr Val Glu Glu  
 1315 1320 1325

Gly Glu Arg Ile Ile Val Lys Glu Val Glu Glu Ile Glu Glu Glu Val  
 1330 1335 1340

Glu Lys Glu Val Glu Lys Val Gly Arg Thr Glu Met Thr Leu Phe Gln  
 1345 1350 1355 1360

Arg Leu Ala Glu Gly Phe Asn Glu Leu Lys Gln Asp Glu Glu Asn Phe  
 1365 1370 1375

Val Arg Glu Leu Ser Lys Glu Glu Met Glu Phe Leu Asp Glu Ile Lys  
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Met Glu Ala Ser Glu Val Glu Lys Leu Phe Gly Lys Ala Leu Pro Ile  
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Gln Pro Pro Thr Asn Ile Ile Met Met Lys Ile Arg Ser Asn Asn Gly  
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Tyr Phe Asn Ser Phe Arg Leu Phe Thr Ser Tyr Lys Thr Ser Ser Phe  
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Ser Asp Ser Ser His Cys Lys Asp Lys Ser Gln Ile Cys Ser Ile Asp  
 65 70 75 80

Thr Ser Phe Glu Glu Ile Gln Arg Phe Asp Leu Lys Arg Gly Met Thr  
 85 90 95

Leu Ile Leu Glu Lys Gln Trp Arg Gln Phe Ile Gln Leu Ala Ile Val  
 100 105 110

Leu Val Cys Thr Phe Val Ile Val Pro Arg Val Asp Ala Val Asp Ala  
 115 120 125

Leu Lys Thr Cys Ala Cys Leu Leu Lys Glu Cys Arg Ile Glu Leu Ala  
 130 135 140

Lys Cys Ile Ala Asn Pro Ser Cys Ala Ala Asn Val Ala Cys Leu Gln  
 145 150 155 160

Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys Cys Gly

165	170	175
Asp Leu Phe Glu Asn Ser Val Val Asp Gln Phe Asn Glu Cys Ala Val		
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Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Glu Phe Pro		
195	200	205
Val Pro Asp Arg Asn Ala Val Val Gln Asn Phe Asn Met Lys Asp Phe		
210	215	220
Ser Gly Lys Trp Tyr Ile Thr Ser Gly Leu Asn Pro Thr Phe Asp Ala		
225	230	235
Phe Asp Cys Gln Leu His Glu Phe His Met Glu Asn Asp Lys Leu Val		
245	250	255
Gly Asn Leu Thr Trp Arg Ile Lys Thr Leu Asp Gly Gly Phe Phe Thr		
260	265	270
Arg Ser Ala Val Gln Thr Phe Val Gln Asp Pro Asp Leu Pro Gly Ala		
275	280	285
Leu Tyr Asn His Asp Asn Glu Phe Leu His Tyr Gln Asp Asp Trp Tyr		
290	295	300
Ile Leu Ser Ser Gln Ile Glu Asn Lys Pro Asp Asp Tyr Ile Phe Val		
305	310	315
Tyr Tyr Arg Gly Arg Asn Asp Ala Trp Asp Gly Tyr Gly Gly Ser Val		
325	330	335
Ile Tyr Thr Arg Ser Pro Thr Leu Pro Glu Ser Ile Ile Pro Asn Leu		
340	345	350
Gln Lys Ala Ala Lys Ser Val Gly Arg Asp Phe Asn Asn Phe Ile Thr		
355	360	365
Thr Asp Asn Ser Cys Gly Pro Glu Pro Pro Leu Val Glu Arg Leu Glu		
370	375	380
Lys Thr Ala Glu Glu Gly Glu Lys Leu Leu Ile Lys Glu Ala Val Glu		
385	390	395
Ile Glu Glu Glu Val Glu Lys Glu Val Glu Lys Val Arg Asp Thr Glu		
405	410	415
Met Thr Leu Phe Gln Arg Leu Leu Glu Gly Phe Lys Glu Leu Gln Gln		



420	425	430
Asp Glu Glu Asn Phe Val Arg Glu Leu Ser Lys Glu Glu Lys Glu Ile		
435	440	445
Leu Asn Glu Leu Gln Met Glu Ala Thr Glu Val Glu Lys Leu Phe Gly		
450	455	460
Arg Ala Leu Pro Ile Arg Lys Leu Arg Met Ala Leu Ala Pro His Ser		
465	470	475 480
Asn Phe Leu Ala Asn His Glu Thr Ile Lys Tyr Tyr Val Gly Ser Lys		
485	490	495
Leu Pro Gly His Lys Arg Phe Ser Trp Gly Trp Glu Asp Tyr Phe Gly		
500	505	510
Ser Ile Val Val Ala Lys Ile Cys Ser Ser Arg Arg Ile Pro Arg Tyr		
515	520	525
Phe Arg Lys Ser Pro Arg Ile Cys Cys Gly Leu Asp Ser Arg Gly Leu		
530	535	540
Gln Leu Phe Ser His Gly Lys His Asn Leu Ser Pro Ala His Ser Ile		
545	550	555 560
Asn Gln Asn Val Pro Lys Gly Asn Ser Gly Cys Lys Phe Pro Lys Asp		
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Val Ala Leu Met Val Trp Glu Lys Trp Gly Gln Phe Ala Lys Thr Ala		
580	585	590
Ile Val Ala Ile Phe Ile Leu Ser Val Ala Ser Lys Ala Asp Ala Val		
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Asp Ala Leu Lys Thr Cys Thr Cys Leu Leu Lys Glu Cys Arg Leu Glu		
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Leu Ala Lys Cys Ile Ser Asn Pro Ala Cys Ala Ala Asn Val Ala Cys		
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Leu Gln Thr Cys Asn Asn Arg Pro Asp Glu Thr Glu Cys Gln Ile Lys		
645	650	655
Cys Gly Asp Leu Phe Glu Asn Ser Val Val Asp Glu Phe Asn Glu Cys		
660	665	670
Ala Val Ser Arg Lys Lys Cys Val Pro Arg Lys Ser Asp Val Gly Asp		

675	680	685
Phe Pro Val Pro Asp Pro Ser Val Leu Val Gln Lys Phe Asp Met Lys		
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Asp Phe Ser Gly Lys Trp Phe Ile Thr Arg Gly Leu Asn Pro Thr Phe		
705	710	715 720
Asp Ala Phe Asp Cys Gln Leu His Glu Phe His Thr Glu Glu Asn Lys		
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Leu Val Gly Asn Leu Ser Trp Arg Ile Arg Thr Pro Asp Gly Gly Phe		
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Phe Thr Arg Ser Ala Val Gln Lys Phe Val Gln Asp Pro Lys Tyr Pro		
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Gly Ile Leu Tyr Asn His Asp Asn Glu Tyr Leu Leu Tyr Gln Asp Asp		
770	775	780
Trp Tyr Ile Leu Ser Ser Lys Val Glu Asn Ser Pro Glu Asp Tyr Ile		
785	790	795 800
Phe Val Tyr Tyr Lys Gly Arg Asn Asp Ala Trp Asp Gly Tyr Gly Gly		
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Ser Val Leu Tyr Thr Arg Ser Ala Val Leu Pro Glu Ser Ile Ile Pro		
820	825	830
Glu Leu Gln Thr Ala Ala Gln Lys Val Gly Arg Asp Phe Asn Thr Phe		
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Ile Lys Thr Asp Asn Thr Cys Gly Pro Glu Pro Pro Leu Val Glu Arg		
850	855	860
Leu Glu Lys Lys Val Glu Glu Gly Glu Arg Thr Ile Ile Lys Glu Val		
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Glu Glu Ile Glu Glu Glu Val Glu Lys Val Arg Asp Lys Glu Val Thr		
885	890	895
Leu Phe Ser Lys Leu Phe Glu Gly Phe Lys Glu Leu Gln Arg Asp Glu		
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Glu Asn Phe Leu Arg Glu Leu Ser Lys Glu Glu Met Asp Val Leu Asp		
915	920	925
Gly Leu Lys Met Glu Ala Thr Glu Val Glu Lys Leu Phe Gly Arg Ala		

930	935	940
Leu Pro Ile Arg Lys Leu Met Ala Val Ala Thr His Cys Phe Thr Ser		
945	950	955 960
Pro Cys His Asp Arg Ile Arg Phe Phe Ser Ser Asp Asp Gly Ile Gly		
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Arg Leu Gly Ile Thr Arg Lys Arg Ile Asn Gly Thr Phe Leu Leu Lys		
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Phe Asp Ile Val Pro Leu Pro Ser Lys Asn Glu Leu Lys Glu Leu Thr		
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Ala Pro Leu Leu Leu Lys Leu Val Gly Val Leu Ala Cys Ala Phe Leu		
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Ile Val Pro Ser Ala Asp Ala Val Asp Ala Leu Lys Thr Cys Ala Cys		
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Leu Leu Lys Gly Cys Arg Ile Glu Leu Ala Lys Cys Ile Ala Asn Pro		
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Ala Cys Ala Ala Asn Val Ala Cys Leu Gln Thr Cys Asn Asn Arg Pro		
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Asp Glu Thr Glu Cys Gln Ile Lys Cys Gly Asp Leu Phe Glu Asn Ser		
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Val Val Asp Glu Phe Asn Glu Cys Ala Val Ser Arg Lys Lys Cys Val		
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Pro Arg Lys Ser Asp Leu Gly Glu Phe Pro Ala Pro Asp Pro Ser Val		
	1140	1145 1150
Leu Val Gln Asn Phe Asn Ile Ser Asp Phe Asn Gly Lys Trp Tyr Ile		
	1155	1160 1165
Thr Ser Gly Leu Asn Pro Thr Phe Asp Ala Phe Asp Cys Gln Leu His		
	1170	1175 1180
Glu Phe His Thr Glu Gly Asp Asn Lys Leu Val Gly Asn Ile Ser Trp		

1185  
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 Ser Ile Gly Arg Asp Phe Ser Thr Phe Ile Arg Thr Asp Asn Thr Cys  
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 Arg Lys Val Arg  
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